



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/730,313	12/05/2000	Yoshinori Muramatsu	APM-01401	7555

26339 7590 08/02/2004

PATENT GROUP
CHOATE, HALL & STEWART
EXCHANGE PLACE, 53 STATE STREET
BOSTON, MA 02109

EXAMINER

HENN, TIMOTHY J

ART UNIT	PAPER NUMBER
----------	--------------

2612

DATE MAILED: 08/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,313

Applicant(s)

MURAMATSU, YOSHINORI

Examiner

Timothy J Henn

Art Unit

2612

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 December 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 February 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 7, 8.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings were received on February 19, 2001. These drawings are acceptable.

Specification

2. The disclosure is objected to because of the following informalities:
 - i. The specification refers to the vertical shift register as both item number 2 (e.g. p. 8, l. 23) and number 3 (e.g. p. 8, l. 8) while the drawings show the vertical shift register as item number 2 (e.g. figures 3 and 5).
 - ii. The specification refers to the horizontal shift register as both item number 2 (e.g. p. 8, ll. 7-8) and number 3 (e.g. p. 8, l. 24) while the drawings show the vertical shift register as item number 3 (e.g. figures 3 and 5).
 - iii. The specification refers to a "horizontal clock generator" (e.g. p. 8, ll. 11-12) and a "vertical clock generator" (e.g. p. 8, l. 10) while the drawings shows a first clock generator and a second clock generator.

Appropriate correction for consistency between the specification and the figures is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 11-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

[claims 11-31]

Claims 11-31 claim an apparatus and method in which horizontal and vertical shift registers transmit and receive a second timing signal to and from each other (e.g. claim 11, p. 15, ll. 17-19; claim 12, p. 15, l. 28 - p. 16, l. 1; claim 22, p. 17, ll. 19-20). It is noted from figures 3 and 5 that there is no indication of the vertical shift register sending signals to anything but the pixel array. It is further noted that although the horizontal shift register can be said to send a signal to the vertical shift register through the first clock generator the claims are written in such a way as to suggest that the horizontal and vertical shift registers directly send and receive the second timing signal directly to and from each other without any intermediate steps.

While the specification does provide support for this claim on page 8, lines 23-25 ("The vertical shift register 2 transmits a timing signal to the horizontal shift register 3 and vice versa, and resultingly, the MOS image sensor 20 operates"), it is unclear from the specification how exchanging signals between the vertical and horizontal shift registers operates the image sensor as claimed.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1 and 3-10 are rejected under 35 U.S.C. 102(b) as being anticipated by applicants admitted prior art.

[claim 1]

In regard to claim 1, the applicants admitted prior art (hereinafter referred to as AAPA) discloses an image sensor (Figure 2) comprising: a pixel array (Figure 2, Item 1); a horizontal shift register horizontally scanning the pixel array (Figure 2, Item 3); a vertical shift register vertically scanning the pixel array to cooperate with the horizontal shift register for selecting a pixel among the pixel array (Figure 2, Item 2); and a horizontal blanking counter counting a horizontal blanking period (Figure 2, Item 9; p. 2, ll. 18-28).

[claim 3]

In regard to claim 3, AAPA discloses a controller (Figure 2, Item 6) receiving an external trigger signal and transmitting the external trigger signal to the horizontal blanking counter (Figure 2); the horizontal blanking counter starting counting the horizontal blanking period on receipt of the external trigger signal.

[claim 4]

In regard to claim 4, note that the vertical shift register would inherently be activated in synchronization of the horizontal blanking counter by definition since the horizontal blanking counter counts the horizontal blanking period (i.e. when the vertical shift register is activated).

[claim 5]

In regard to claim 5, note that the third counter of AAPA outputs a signal or "flag" in synchronization with the horizontal blanking period (Figure 2, output of Third Counter 9).

[claim 6]

In regard to claim 6, note that the horizontal shift register is activated by a second counter which is in turn activated by the horizontal blanking counter (Figure 2).

[claim 7]

In regard to claim 7, note that a second flag indicating that horizontal scanning is completed is formed in synchronization with the horizontal shift register counting up (Figure 2).

[claim 8]

In regard to claim 8, note that the horizontal blanking counter must inherently be activated in synchronization with the activation of the vertical shift register (i.e. after the end of the horizontal scanning period and during the horizontal blanking period).

[claim 9]

In regard to claim 9, note that the vertical shift register is activated when the second flag is formed (Figure 2).

[claim 10]

In regard to claim 10, note that AAPA discloses a first clock generator (Figure 2, Item 4) which transmits a first clock signal to the vertical shift register (Figure 2, Item 2); and a second clock generator (Figure 2, Item 5) which transmits a second clock signal to the horizontal shift register (Figure 2, Item 3).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over applicants admitted prior art.

[claim 2]

In regard to claim 2, note that AAPA does not disclose a counter which is comprised of a shift register. However, the use of shift registers as counters (e.g. a ring counter) is well known in the art to have simple implementations with minimal hardware (Official Notice). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a shift register as the counter of AAPA to use a minimal amount of hardware.

9. Claims 1, 2 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ihara et al. (US 5,249,054).

[claim 1]

In regard to claim 1, note that Ihara discloses a driving circuit for an image sensor comprising: a horizontal blanking counter counting a horizontal blanking period (Figure 8, Item 3; c. 1, ll. 19-36, c. 2, ll. 46-53). Therefore it can be seen that Ihara lacks a pixel array, a horizontal shift register and a vertical shift register. However, it is notoriously well known in the art to make image sensors out of pixel arrays, horizontal shift registers and vertical shift registers (Official Notice). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a pixel array, a horizontal shift register and a vertical shift register as the image sensor which is driven by the driving circuit of Ihara.

[claim 2]

In regard to claim 2, note that Ihara discloses a ring counter or "shift register" as the horizontal blanking counter (Figure 9; c. 1, ll. 387-45).

[claim 4]

In regard to claim 4, note that the vertical shift register would inherently be activated in synchronization of the horizontal blanking counter by definition since the horizontal blanking counter counts the horizontal blanking period (i.e. when the vertical shift register is activated).

[claim 5]

In regard to claim 5, note that Ihara discloses a reset signal or "first flag" indicating that the horizontal blanking is completed formed in synchronization with the horizontal blanking counter counting up (Figure 11; c. 2, ll. 46-68).

[claim 6]

In regard to claim 6, note that Ihara discloses activation of a horizontal readout after the completion of counting of a horizontal blanking period (Figure 11).

[claim 7]

In regard to claim 7, note that Ihara discloses a reset signal or "second flag" indicating that horizontal scanning is completed formed in synchronization with the horizontal readout (Figure 11; c. 2, ll. 46-68).

[claim 8]

In regard to claim 8, note that the second counter is activated when the second flag is formed (Figure 11).

[claim 9]

In regard to claim 9, note that the vertical readout is activated when the second flag is formed (Figure 11; c. 2, ll. 46-68).

[claim 10]

In regard to claim 10, note that Ihara does first and second clock signal generators for the horizontal shift register (Figure 8, Output 4; c. 1, ll. 19-36) and the vertical shift register (Figure 8, Output 7; c. 1, ll. 19-36).

Allowable Subject Matter

10. Claim 11 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, the allowance of claim 11 may be revisited pending any amendments made to overcome 35 U.S.C. §112 rejections.

11. Claims 12-31 are allowed. However, the allowance of claims 12-31 may be revisited pending any amendments made to overcome 35 U.S.C. §112 rejections.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Timothy J Henn whose telephone number is (703) 305-8327. The examiner can normally be reached on M-F 7:30 AM - 5:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wendy R Garber can be reached on (703) 305-4929. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TJH
7/20/2004



NGOC-YEN VU
PRIMARY EXAMINER